

Work Order ID 141678

Tuesday, February 09, 2016 8:15:46 AM

141678

Page 1

Item ID: D212-664-101TRN

Accept

N9000040100

Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Crosstube Turning Detail

Start Date: 2/9/2016 Start Qty: 1.00 ***1***

Cust Item ID:

Required Date: 2/16/2016 Req'd Qty: 1.00 ***1***

Customer:

Reference:

Approvals: Process Plan: *MLC*

Date: **FEB 09 2016** Tooling:

Date:

Run Start ***NR1***

QC:

Date: SPC (Y/N):

Date:

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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Draw Nbr

Revision Nbr

D212-664-141

E

100

0.00

100

MORI SEIKI CNC LATHE LARGE

Mori Seiki

Memo

0.02

Mori Seiki CNC Lathe Large

1-Fill tube with sand & install plugs DT8534 on both ends as per Folio FA113

2-Turn first side as per Folio FA113

3-Blend transition lines only, **do not sand whole tube**:

FOLIO REV: *11*

DWG REV: *11*

*Use mill bastard file, brush file repeatedly with file card.

*Do not use sandpaper coarser than 320 grit.

110

QC2- Inspect parts off machine FAI/FAIB

0.00

110

QC

Memo

0.00

Quality Control

1 11

mmml
16/02/09

1 11

mmml
16/02/09

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval		
Description Work Order Deviation				Disposition					
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐							
OTHER : ☐									

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Page 2

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N900040100Setup Start ***NS1***

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Cust Item ID:

Required Date: 2/16/2016 Req'd Qty: 1.00 ***1***

Customer:

Reference:

Approvals: Process Plan: Date:

Tooling: Date:

Run Start ***NR1***

QC: Date:

SPC (Y/N): Date:

Stop ***NR2***Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run HoursTool ID Tool # Plan
Code Accept Reject Reject Insp.
Qty Qty Number Stamp

120

0.00

120

MORI SEIKI CNC LATHE LARGE

Mori Seiki

Memo

0.03

Mori Seiki CNC Lathe Large

1-Turn second side as per Folio FA113

2-Blend transition lines only, **do not sand whole tube**:

*Use mill bastard file, brush file repeatedly with file card.

*Do not use sandpaper coarser than 320 grit.

FOLIO REV: A DWG REV: E

3-Remove sand and plugs

130

0.00

130

QC2- Inspect parts off machine FAI/FAIB

QC

Memo

0.00

Quality Control

+ PERFORM ULTRA SONIC MEASUREMENT

/ ϕ mm
16/02/12/ ϕ mm
16/02/12

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS <table style="width:100%; border: none;"> <tr> <td style="border: none;">Skid-tube ☐</td> <td style="border: none;">Cross tube ☐</td> <td style="border: none;">Water Jet ☐</td> <td style="border: none;">Engineering ☐</td> </tr> <tr> <td style="border: none;">Machining ☐</td> <td style="border: none;">Small Fab ☐</td> <td style="border: none;">Prod. Eng. Coord. ☐</td> <td style="border: none;">Quality ☐</td> </tr> <tr> <td style="border: none;">Thermoforming ☐</td> <td style="border: none;">Finishing ☐</td> <td style="border: none;">Rec/Store/Packaging ☐</td> <td style="border: none;">Other ☐</td> </tr> <tr> <td style="border: none;">Large Fab ☐</td> <td style="border: none;">Composite ☐</td> <td style="border: none;">Supplier ☐</td> <td></td> </tr> </table>						Skid-tube ☐	Cross tube ☐	Water Jet ☐	Engineering ☐	Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐	Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐	Large Fab ☐	Composite ☐	Supplier ☐																									
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Description Work Order Deviation				Disposition				Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval																																									
Root Cause		FAULT CATEGORY																																															
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Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐																																														
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141678

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Item ID: D212-664-101TRN

Accept

N900040100

Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Crosstube Turning Detail

Start Date: 2/9/2016 Start Qty: 1.00

1

Cust Item ID:

Required Date: 2/16/2016 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start ***NR1***

QC:

Date:

SPC (Y/N):

Date:

Stop ***NR2***

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

140

QC8- Inspect parts - second check

0.00

140

QC

Memo

0.00

Quality Control

+ CHECK ULTRA SONIC MEASUREMENT AND ORIENTATION FOR
BENDING

1

Ø

47
9-89

16-02-16

145

0.00

145

Crosstubes

Memo

0.01

Crosstubes

GRIND ONLY TRANSITION LINES SMOOTH LONGITUDE WAY.

BC

16/02/16

150

0.00

150

HandFXtube

Memo

0.01

Hand Finishing Crosstubes

1- PRESSURE WASH X-TUBE INSIDE AND OUT

2- ALODINE AND ACID ETCH X-TUBE INSIDE AND OUT. USE RED
SCOTCH BRITE

BC

16/02/16

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :				MRB (QSI042) Approval Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval	
Description Work Order Deviation				Disposition					
Root Cause		FAULT CATEGORY							
Environment ☐	☐ No Re-verification	☐ Pressure/Forced	☐ Temperature/Cure	☐ Power Loss/Surge	☐ Positioned Wrong				
Design ☐	☐ Operator	☐ Bending	☐ Set-up	☐ Folio/Program	☐ Outside Dimensions				
Doc/Data ☐	☐ Offset/Setup	☐ Centre Not Concentric	☐ BOM/Route	☐ Grain	☐ Over/Under tolerance				
Equip/Tooling ☐	☐ Supplier	☐ Cracks	☐ Broken/Damage/Defect	☐ Weld	☐ Part Incorrect				
Handling/Pre ☐	☐ Training	☐ Crimp/Kink/Ripple/Wave	☐ Inspection Incomplete/Unqualified	☐ Wrong Stock Pulled	☐ Part Lost/Missing				
Material ☐	☐ Use for Testing	☐ Cuffs	☐ Contamination	☐ Out of Sequence	☐ Part Moved				
Internal Transport ☐	☐ Poor Information	☐ Crushing	☐ Countersink	☐ Off-set	☐ Drawing				
Tribal Knowledge ☐	☐ Rushing	☐ Heat Treat	☐ Cut Too Short	☐ Mislabeled	☐ Finish				
LOA ☐	☐ Product Improvement	☐ Wave/Twist in Tube	☐ Instructions Incomplete/Unclear	☐ Fit/Function	☐ Misread				
Substation ☐	☐ Process Improvement	☐ Marks/Chatter	☐ Drill Holes	☐ Misaligned/off center	☐ Turning Sequence				
Past Expiry Date ☐	☐ Manufacturing Process	OTHER : _____							
Misidentified ☐	☐ Past Due								

Work Order ID 141678

Tuesday, February 09, 2016 8:15:46 AM

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Page 4

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Setup Start ***NS1***

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Item Name: Crosstube Turning Detail

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Approvals: Process Plan: Date:

Tooling: Date:

Run Start ***NR1***

QC: Date:

SPC (Y/N): Date:

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
160	QC7-Inspect Chemical Conversion Coat	0.00							
160									
QC	Memo	0.00							
Quality Control									
170	Packaging	0.00							
170									
Packaging	Memo	0.00							
Packaging	LOCATION : LG014								
180	QC21- Final Inspection - Work Order Release	0.00							
180									
QC	Memo	0.00							
Quality Control									

16-2-17

BCL 16/02/17

MCS FEB 19 2016

MCS FEB 18 2016

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval		
Description Work Order Deviation				Disposition					
Root Cause		FAULT CATEGORY							
Environment ☐	☐ No Re-verification	☐ Pressure/Forced	☐ Temperature/Cure	☐ Power Loss/Surge	☐ Positioned Wrong				
Design ☐	☐ Operator	☐ Bending	☐ Set-up	☐ Folio/Program	☐ Outside Dimensions				
Doc/Data ☐	☐ Offset/Setup	☐ Centre Not Concentric	☐ BOM/Route	☐ Grain	☐ Over/Under tolerance				
Equip/Tooling ☐	☐ Supplier	☐ Cracks	☐ Broken/Damage/Defect	☐ Weld	☐ Part Incorrect				
Handling/Pre ☐	☐ Training	☐ Crimp/Kink/Ripple/Wave	☐ Inspection Incomplete/Unqualified	☐ Wrong Stock Pulled	☐ Part Lost/Missing				
Material ☐	☐ Use for Testing	☐ Cuffs	☐ Contamination	☐ Out of Sequence	☐ Part Moved				
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Past Expiry Date ☐	☐ Manufacturing Process	OTHER : _____							
Misidentified ☐	☐ Past Due								

Picklist Print

Tuesday, February 09, 2016 8:15:51 AM

Page 1

Work Order ID: 141678

141678

Parent Item: D212-664-101TRN

D212-664-101TRN

Parent Item Name: Crosstube Turning Detail

Start Date: 2/9/2016

Required Date: 2/16/2016

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP Rev:A 08-03-06 new issue DD verified by:ec
IPP Rev B 08.04.02 removed Polish EC verified by: DD

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D6005-128		Manufactured	No			120	Each	93.0000	1	1			

D6005-128

**

Crosstube Material

Location	Loc Qty	Loc Code
HALL	24	
123963	24	
LG003	69	
107872	10	
123965	37	
75642	22	

1 mm 16/02/09

DQA: _____ Date: _____



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QA Closed: _____ Date: _____

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		OTHER : ☐							

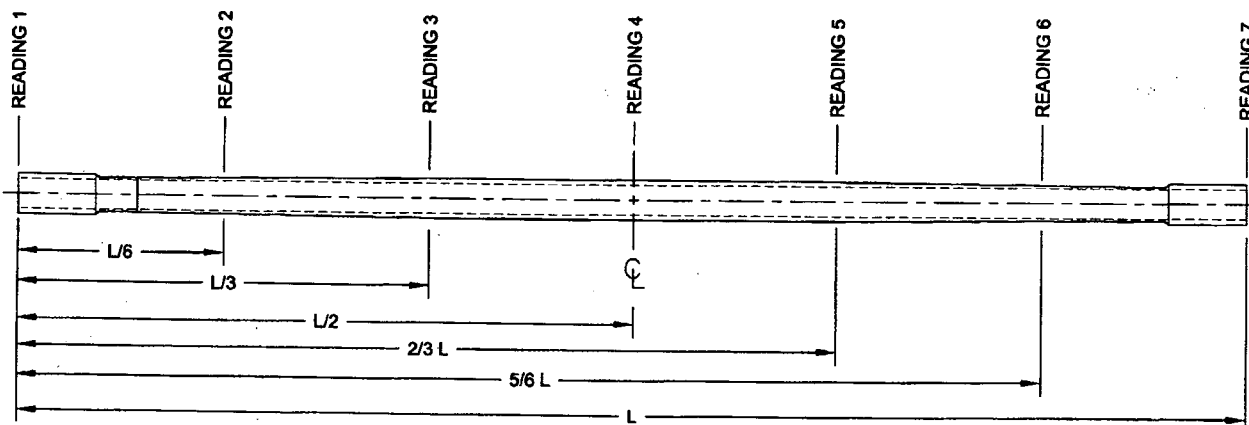
DART AEROSPACE LTD	Work Order:	141678
Description: Crosstube Assembly (205/212/412 High Fwd)	Part Number:	D212-664-141
Inspection Dwg: D212-664-141 Rev: E		Page 1 of 2

FIRST ARTICLE INSPECTION CHECKLIST

	Inspection Sheet Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
SIDE A	0.200	+/-0.010	.200	/		vern	CNC-08
	R0.063	+/-0.010	.063	/		RG	
	2.740	+0.005/-0.000	2.740	/		vern	CNC-08
	5.097	+/-0.030	5.100	/			
	2.304	+0.005/-0.000	2.308	/			
	2.340	+0.005/-0.000	2.345	/			
	2.398	+0.005/-0.000	2.403	/			
	2.448	+0.005/-0.000	2.453	/			
	2.498	+0.005/-0.000	2.502	/			
	2.549	+0.005/-0.000	2.554	/			
	2.599	+0.005/-0.000	2.604	/			
	2.671	+0.005/-0.000	2.675	/			
	2.701	+0.005/-0.000	2.706	/			
SIDE B	0.200	+/-0.010	.200	/		vern	CNC-08
	R0.063	+/-0.010	.063	/		RG	
	2.740	+0.005/-0.000	2.740	/		vern	CNC-08
	5.097	+/-0.030	5.100	/			
	2.304	+0.005/-0.000	2.307	/			
	2.340	+0.005/-0.000	2.345	/			
	2.398	+0.005/-0.000	2.403	/			
	2.448	+0.005/-0.000	2.452	/			
	2.498	+0.005/-0.000	2.501	/			
	2.549	+0.005/-0.000	2.553	/			
	2.599	+0.005/-0.000	2.603	/			
	2.671	+0.005/-0.000	2.674	/			
	2.701	+0.005/-0.000	2.704	/			
	126.514	+/-0.020	126.514	/		type	

DART AEROSPACE LTD		Work Order:	141678
Description: Crosstube Assembly (205/212/412 High Fwd)		Part Number:	D212-664-141
Inspection Dwg: D212-664-141 Rev: E		Page 2 of 2	

WALL THICKNESS MEASUREMENT



Location	WALL THICKNESS MEASUREMENT (IN)				Deviation Δw (max-min)	TOLERANCE
	w1	w2	w3	w4		
READING 1 L = 0"	.374	.377	.373	.371	.006	0.048"
READING 2 L = 21	.251	.233	.220	.242	.031	
READING 3 L = 42	.354	.353	.341	.345	.013	
READING 4 L = 63	.376	.382	.371	.371	.011	
READING 5 L = 84	.354	.356	.345	.346	.011	
READING 6 L = 105	.239	.247	.237	.234	.010	
READING 7 L = 126	.375	.377	.369	.373	.008	

Calibration Result

Actual Block Thickness: 1.00 - 1.50

DAS 47 Sitescan 250 Measured Thickness: 1.00 - 1.50

Measured by: mmL	Audited by: 9-89	Preliminary Approval:
Date: 12/02/12	Date: 16-02-16	Date:

Rev	Date	Change	Revised by	Approved
C	07.05.28	Dwg Rev updated (P/O D412-664-101)	KJ/JLM	
D	10.02.02	Dimension 126.514 was 126.51	KJ	
E	12.06.04	Wall thickness form added	KJ	
F	14.06.05	Dwg Rev updated	KJ	

Item	Qty -141	Qty -141B	Qty -141F	Part Number	Description
1	X			D212-664-141	CROSSTUBE ASSEMBLY (205/212/412 HIGH FWD)
2		X		D212-664-141B	CROSSTUBE ASSEMBLY (214 HIGH FWD)
3			X	D212-664-141F	CROSSTUBE ASSEMBLY (205/212/412 HIGH FWD) (ANODIZED)
4	1	1	1	D6005-128	CROSSTUBE
5	2		2	D2893-1	SUPPORT
6	4	4	4	D3595-063-450	RUBBER CUSHION
7		2		D5017-1	SUPPORT
8	4	4	4	MS21920-25	CLAMP (OR MS21920-26)
9	A/R	A/R	A/R	PROSEAL 890 B-2	SEALANT, AMS-S-8802 CLASS B-2

GENERAL NOTES:

- MATERIAL: MANUFACTURED FROM D6005-128
FINISHED LENGTH = 128.514±0.020
- FINISH -141 & -141B: a) CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
b) PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
c) MASK UNDERSIDE OF CROSSTUBE AS SHOWN (ZN C6-2 / C6-3, HATCHED AREA)
d) PAINT OUTSIDE PER DART QSI 005 4.2
e) REMOVE MASKING AND APPLY MATTE CLEAR COAT

- FINISH -141F: a) ANODIZE PER MIL-A-8625, TYPE II, CLASS 1.
b) ALODINE (DO NOT ETCH) PER QSI 005 4.1.2
c) PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
d) MASK UNDERSIDE OF CROSSTUBE AS SHOWN (ZN C6-2 / C6-3, HATCHED AREA)
e) PAINT OUTSIDE PER DART QSI 005 4.2
f) REMOVE MASKING AND APPLY MATTE CLEAR COAT

***NOTE:** BETWEEN FINISHING OPERATIONS EXTREME CARE MUST BE TAKEN NOT TO CONTAMINATE OR DAMAGE FINISHED SURFACES.

- TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- UNITS: INCHES UNLESS OTHERWISE NOTED.
- BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- IDENTIFICATION: SCRIBE DART PART NUMBER "D212-664-XXX" AND BATCH NUMBER ON INSIDE OF CUFF USING VIBRATING STYLUS
- WEIGHT: D212-664-141/-141B/-141F = 33.6 lbs
- PART IS SYMMETRIC ABOUT CENTERLINE.
- EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.

MACHINING

- RUN CUTTER OFF PART. BLEND OUT EDGE LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH.

BENDING

- BEND PROGRESSIVELY WITH A MINIMUM OF 3 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 7.2% (BASED ON O.D.) IN LOWER HALF OF R35.5 BEND AND 6% (BASED ON O.D.) ON REMAINING TUBE.
- LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.

ASSEMBLY

- TO INSTALL D2893-1 / D5017-1 SUPPORT: ABRASE MATING SURFACE OF SUPPORT AND CROSSTUBE WITH 180-GRIT SANDPAPER AND REMOVE RESIDUE WITH MEK (OR EQUIVALENT). APPLY A 0.04" TO 0.07" THICK LAYER OF PROSEAL 890 CLASS B-2 (OR AMS-S-8802 CLASS B-2) SEALANT TO MATING SURFACE OF SUPPORT.
- INSTALL MS21920-25 CLAMPS (OR -26) WITH D3595-063-450 RUBBER CUSHIONS TO SECURE THE SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE ON TOP SIDE OF CROSSTUBE.
- TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 890 SEALANT HAS CURED FOR 72 HOURS.

141678 MJ
16-02-09

RELEASED
2014-05-26
WD

E	ADD -141F, D5017-1 WAS D2893-1 (-141B). PROSEAL WAS MAGNOBOND, NOTE 2: ADD INSPECTION WINDOW, NOTE 11: ALLOW 7.2% CRUSH, NOTE 15: ADD 72HR CURE AND RETORQUE FOR PROSEAL, ADD SHEET 3, CLAMPS REVERSED TO PREVENT CHAFING (B7-2, B7-3), BEND HEIGHT TOL. NOW 0.25 WAS 0.13 (C1-3), INCORP. DEO D-11-21-3	CP	14.04.01
D	REFORMAT/REVISE GENERAL NOTES/PART LIST: REORGANIZED VIEWS AND REFORMATTED DRAWING TO CURRENT STANDARDS; ADD -141B (ZN B4-2, D4-2); REMOVED REF & ADD TOLERANCES (ZN B4-3, C6-3, C8-3 & B8-3); RELOCATED FLAG #6 PER PAR 08-046 (ZN A5-3); MOVED TURNING DETAIL & UPDATED TOLERANCE TO SHEET 4	RF	09.09.30
C	REMOVE -851 ABRASION STRIP; ADD MAGNOBOND 6388, CUSHION, REVERSE CLAMPS	PH	07.03.08
B	ADD HOLES FOR COMPATABILITY WITH BHT/AA SKIDTUBES	PH	05.02.04
A	NEW ISSUE	CP	00.12.12
REV.	DESCRIPTION	BY	DATE
DESIGN	DP	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	DP		
CHECKED	DW	DRAWING NO.	REV. E
MFG. APPR.	ED	D212-664-141	SHEET 1 OF 5
APPROVED	ED	TITLE	SCALE
DE APPR.	ED	XTUBE ASSY (205/212/412 HI FWD)	NTS
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8 7 6 5 4 3 2 1

13 14 15
D2893-1 SUPPORT
MS21920-25 CLAMP, 2X
D3595-063-450 RUBBER CUSHION, 2X
2 PL

14.00

D212-664-501
BENT TUBE

2.0
1.0

MASK AREA PRIOR TO PAINTING,
REMOVE MASKING AFTER PAINT
AND APPLY CLEAR COAT

2.0

SYM

D212-664-141/-141F
ASSEMBLY DETAIL

MS21920-25
CLAMP, REF
14 15

D2893-1
SUPPORT, REF

APPLY PROSEAL
BETWEEN D2893-1 AND
CROSSTUBE

D3595-063-450
RUBBER CUSHION
UNDER CLAMP, REF

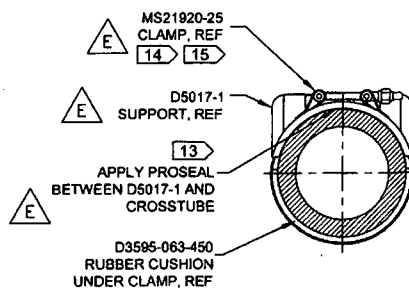
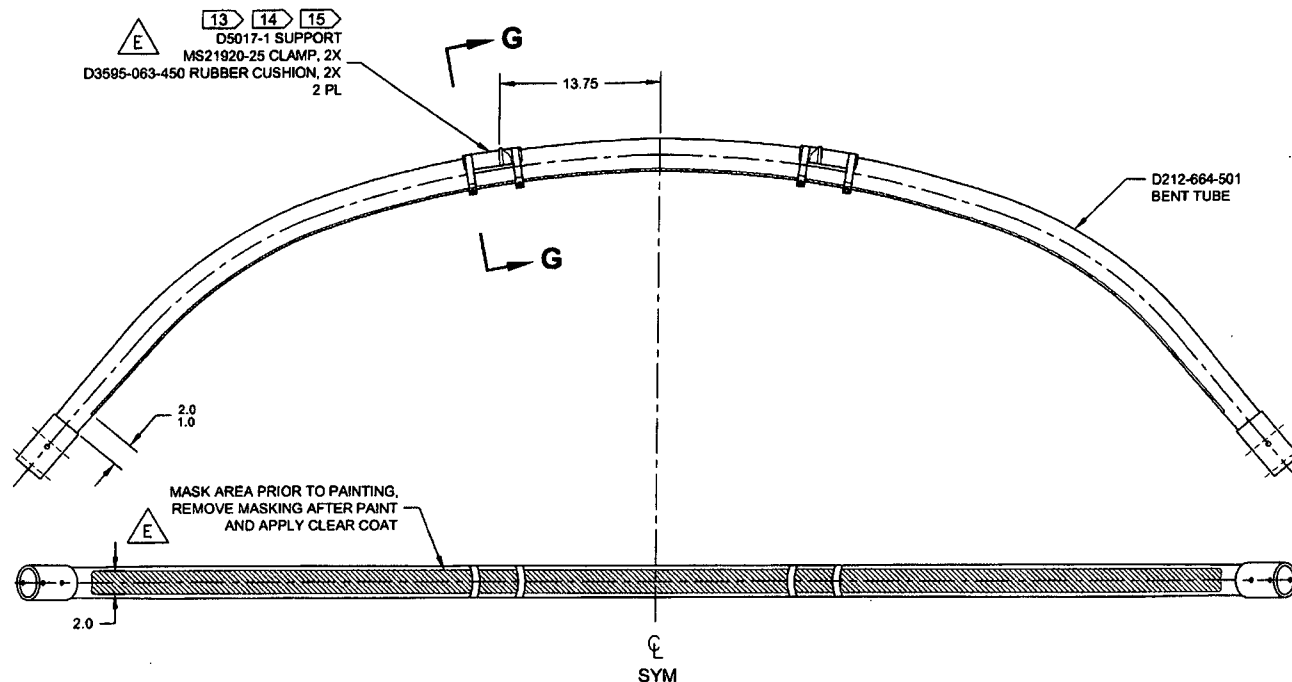
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SCALE 4X

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2014-05-26
AND

DESIGN	Q	DART AEROSPACE LTD	
DRAWN	Q	HAWKESBURY, ONTARIO, CANADA	
CHECKED	Q	DRAWING NO.	REV. E
MFG. APPR.	Q	D212-664-141	SHEET 2 OF 5
APPROVED	Q	TITLE	SCALE
DE APPR.	Q	XTUBE ASS'Y (205/212/412 HI FWD)	NTS
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8 7 6 5 4 3 2 1



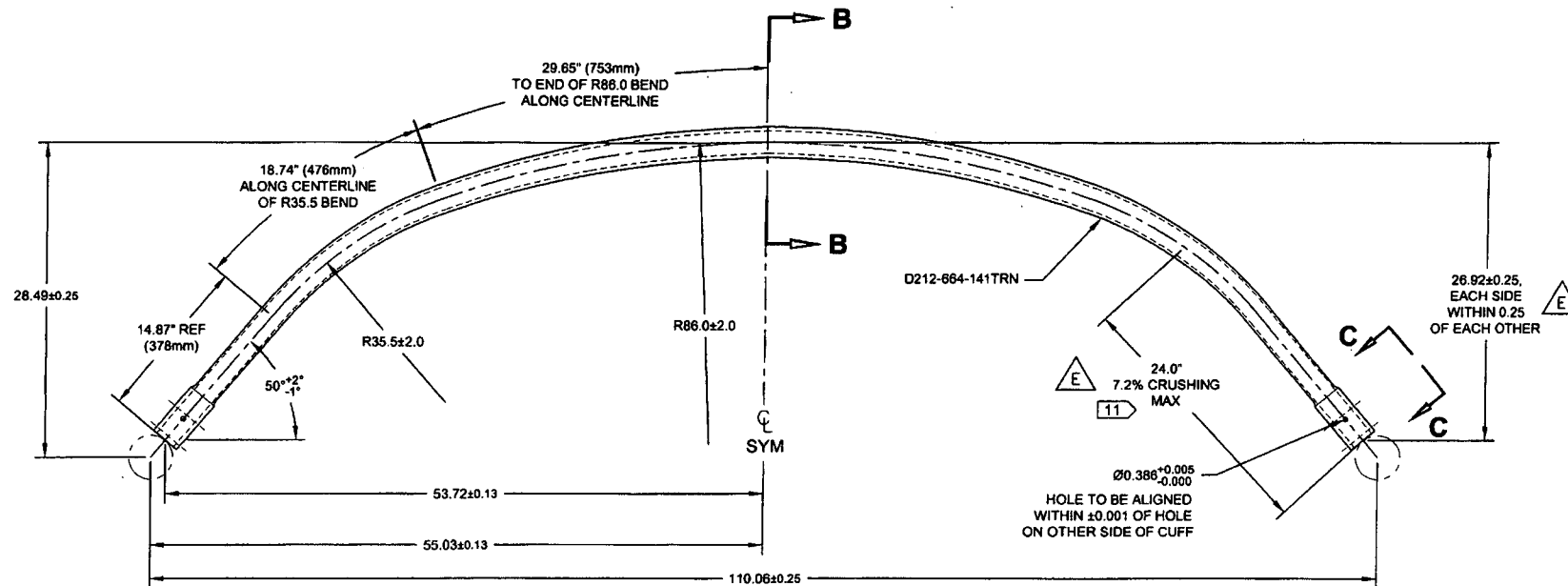
SECTION G-G
SCALE 4X

D212-664-141B
ASSEMBLY DETAIL

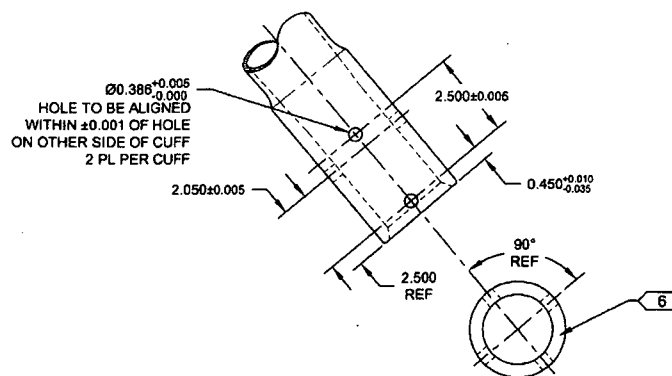
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CHECKED	<i>[Signature]</i>	DRAWING NO.	REV. E
MFG. APPR.	<i>[Signature]</i>	D212-664-141	SHEET 3 OF 5
APPROVED	<i>[Signature]</i>	TITLE	SCALE
DE APPR.	<i>[Signature]</i>	XTUBE ASS'Y (205/212/412 HI FWD)	NTS
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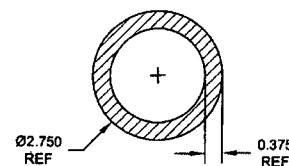
8 7 6 5 4 3 2 1



D212-664-501
BENDING AND DRILLING DETAIL 11



VIEW C-C: CUFF DETAIL
SCALE 3X



SECTION B-B
SCALE 4X

RELEASED
2014-05-26

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DRAWN		HAWKESBURY, ONTARIO, CANADA	
CHECKED		DRAWING NO.	REV. E
MFG. APPR.		D212-664-141	SHEET 4 OF 5
APPROVED		TITLE	SCALE
DE APPR.		XTUBE ASS'Y (205/212/412 HI FWD)	NTS
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